

FOREST OIL CORP.
EXXON CORP.

IBLA 93-586

Decided December 1, 1997

Appeal from a decision of the Deputy State Director, Mineral Resources, Wyoming, Bureau of Land Management, finding liability for compensatory royalty for oil and gas drained from oil and gas lease WYW-105536.

Reversed.

1. Oil and Gas Leases: Compensatory Royalty--Oil and Gas Leases: Drainage

A Federal lessee does not owe compensatory royalty for drainage where a prudent operator would not have drilled a protective well because it would not have afforded a reasonable profit over and above the costs of drilling and operating the well. The determination of the economic feasibility of drilling and operating a protective well is based on the anticipated recovery and costs thereof at the time that a prudent operator would have drilled the well, i.e., a reasonable time after he knew or should have known that drainage was occurring.

2. Oil and Gas Leases: Compensatory Royalty--Oil and Gas Leases: Drainage

A common lessee whose operations are causing the drainage is in the best position to know that drainage is occurring and is presumed to have knowledge of drainage upon first production from its offending well.

Such a lessee carries the burden of producing evidence and the ultimate burden of persuasion to establish that a prudent operator would not have drilled a protective offset well because it would not produce a reasonable profit.

3. Oil and Gas Leases: Compensatory Royalty--Oil and Gas Leases: Drainage

In determining whether a prudent operator would drill a protective well in a drainage situation, an analysis may be made of the projected return to the operator on the investment after payment of the expenses of drilling and completing a producing well, operating expenses, and other expenses such as royalty and severance taxes. As income taxes affect the net return to the operator, they are properly considered in evaluating the reasonableness of the rate of return to the operator.

APPEARANCES: Richard W. Schelin, Esq., Denver, Colorado, for Forest Oil Corporation; Scott Lansdown, Esq., Midland, Texas, for Exxon Company, U.S.A.; Robert G. Leo, Jr., Esq., Denver, Colorado, for Amoco Corporation; M. Dennis Daugherty, Esq., Office of the Solicitor, Washington, DC, for the Bureau of Land Management.

OPINION BY ADMINISTRATIVE JUDGE GRANT

Forest Oil Corporation and Exxon Corporation have appealed from the May 7, 1993, Decision of the Deputy State Director, Mineral Resources, Wyoming, Bureau of Land Management (BLM), on State Director Review (SDR No. WY-93-07) affirming two August 14, 1992, Decisions of the District Manager, Casper District, Wyoming, BLM. The BLM Decision determined that Appellants are liable for compensatory royalty with respect to oil and gas drained from Federal oil and gas lease WYW-105536 from January 1, 1990, to April 30, 1992. Although Appellants do not dispute that drainage may have occurred, they assert that liability for compensatory royalty arises only if a prudent operator would drill a protective well and contend that a protective well would have been uneconomic in this case.

Exxon held an interest in the lease throughout the relevant period. Forest acquired its interest from TOC Rocky Mountains, Inc. (TOC), a division of Amoco Corporation, which purchased Tenneco Oil Company's interests in the area. Because BLM's Decision held TOC liable for compensatory royalty for the period it held an interest in the lease, we granted TOC's motion to intervene by Order dated September 21, 1993. In a subsequent Notice filed on March 21, 1994, BLM referred to our decision in Benson-Montin-Greer Drilling Corp., 123 IBLA 341 (1992), in which we held that an assignee is entitled to a reasonable time from the date of acquisition of the lease for completion of an offset well before becoming liable for compensatory royalty. The BLM Notice indicated that a reasonable time would be 6 months from acquisition of a lease interest and, hence, Forest's liability would commence on January 1, 1992.

Drainage occurs when a well is drilled close enough to the boundary of an adjacent parcel that oil or gas migrates from that parcel to the well.

Absent unitization, the owner of the parcel on which the offending well is located receives royalty on all of the oil or gas produced from the well including that which has migrated from the adjacent lease. The owner of the drained parcel receives nothing. In many drainage situations, both the owner of the drained parcel and his lessee have an incentive to recover the production they can by drilling an offset or protective well because the lessee himself is losing the opportunity to sell production that the offending well is draining. Although in this sense the lessee's incentives are in alignment with those of the lessor, the lessor does not share in the cost of a well, and hence, the lessee has the risk of loss from an uneconomic well. ^{1/} Accordingly, the duty of a lessee to drill a protective well has been held to be governed by the "prudent operator" rule.

[1] Under the prudent operator rule, which has long been followed by the Department in drainage cases, it is well established that even where drainage has occurred, a Federal lessee does not owe compensatory royalty when a prudent operator would not have drilled a protective well because the costs of drilling and operating that well would have exceeded the value of the oil and gas recovered therefrom. See Cowden Oil & Gas Properties, 126 IBLA 32, 43 (1993); Nola Grace Ptasynski, 63 IBLA 240, 252, 89 Interior Dec. 208, 215 (1982). ^{2/} If, however, a lessee would have been afforded a reasonable profit over and above the costs of drilling and operating the well, he is liable for compensatory royalty for failing to do so. See Cowden Oil & Gas Properties, *supra*, at 43. The determination of the economic feasibility of drilling and operating a protective well is based on the anticipated recovery and costs thereof at the time that a prudent operator would have drilled the well, i.e., a reasonable time after he knew or should have known that drainage was occurring. See Atlantic Richfield Co., 105 IBLA 218, 225-26, 95 Interior Dec. 235, 240 (1988). ^{3/}

Although the lessor and lessee generally share a common incentive to protect the lease from drainage, the lessee's incentive may be substantially diminished when he is also the lessee of the adjacent parcel on which the offending well causing the drainage is located. Because the lessee shares in production from the offending well, even a profitable offset well may give that lessee little if any net gain, especially if the production from an offset well would diminish the recovery from the offending well. With respect to drainage from a well drilled by the common lessee

^{1/} "The lessor, who risks nothing, is brightly optimistic. The lessee, who pays, is dubious." 5 Williams & Meyers, Oil and Gas Law, § 823 (1996).

^{2/} In upholding this rule, the Board has noted that if the recoverable oil underlying the tract which is being drained is insufficient to support the cost of recovery, no reasonable landowner would drill a well. The oil lost through drainage is not an economic loss to the landowner because an attempt to recover the resource would cause the landowner to lose money. Nola Grace Ptasynski, *supra*, at 251, 89 Interior Dec. at 214.

^{3/} Reaffirmed on Reconsideration, 110 IBLA 200, 96 Interior Dec. 363 (1989).

on the property of another lessor, this Board has rejected arguments that a departure from the prudent operator rule is warranted in the "common lessee" context. See Cowden Oil & Gas Properties, supra, at 42; Atlantic Richfield Co., supra, at 226, 95 Interior Dec. at 240. Otherwise, the lessor in a common lessee context would enjoy a greater advantage and economic recovery than he would have if the lessee were not the operator of the offending well. The Board has also expressed concern that a departure from the prudent operator rule would unfairly subject a lessee to double royalties. Atlantic Richfield Co. (On Reconsideration), 110 IBLA at 206, 96 Interior Dec. at 366. ^{4/}

[2] Because of the knowledge accruing to the common lessee by reason of drilling the offending well and the potential for unfair dealing, we have recognized two differences in the application of the prudent operator rule in the common lessee context. Although a lessee is ordinarily liable for drainage only after passage of a reasonable time from the date he knew or should have known that drainage was occurring, a common lessee whose operations are causing the drainage is in the best position to know that drainage is occurring and is presumed to have knowledge of the drainage upon first production from its offending well. Cowden Oil & Gas Properties, supra, at 42; Atlantic Richfield Co., supra, 105 IBLA at 226, 95 Interior Dec. at 240. This presumption is rebuttable by the lessee whose operations are causing the drainage, but the lessee bears the ultimate burden of persuasion as to notice of drainage.

The second distinction in the application of the prudent operator rule in the common lessee situation involves the allocation of the burden of proof. Although BLM has the burden of establishing that the leased Federal tract is being drained by the common lessee's non-Federal well, BLM does not carry the burden of establishing that a protective well would be economic. In common lessee cases, the burden of producing evidence and the ultimate burden of persuasion on this issue rests with the lessee whose operations are causing drainage. Id. at 225, 95 Interior Dec. at 239; see NGC Energy Co., 114 IBLA 141, 153, 97 Interior Dec. 159, 165 (1990); Cordillera Corp., 111 IBLA 61, 66 (1989).

^{4/} We have often applied the term "common lessee" to the lessee of the Federal tract whose operations on an adjacent tract are causing drainage of the Federal tract. Appellants contend that the finding of common ownership is not entirely correct, in that net interests of lessees in the tract containing the offending well are as follows: PetroCorp: 47.7777 percent; Exxon: 46.6667 percent; Cabot Exploration: 5.5556 percent. This difference is not sufficient to deprive the lessee of the drained tract of its position to know that drainage is occurring and thus does not warrant abandoning the presumption that the lessee had knowledge of the drainage upon first production from the offending well. Knowledge of drainage is properly imputed to a lessee of the drained tract who participates in the operation of the offending well. Cowden Oil & Gas Properties, supra.

Lease W-105536 encompassed 280 acres of land including the E $\frac{1}{4}$ NW $\frac{1}{4}$ of sec. 18. The events leading up to this appeal begin with Exxon's completion of the offending Van Irvine Trust (VIT) Com No. 1 well on April 27, 1988. Although the well at the surface lies on Federal lease W-98513, it was drilled at such an angle that it bottomed on private land in the Muddy formation in lot 1 of sec. 18 just 224 feet west of the W-105536 lease boundary at the E $\frac{1}{4}$ NW $\frac{1}{4}$. ^{5/} The well was shown to have the potential to produce 288 barrels of oil per day (BOPD) and 392 thousand cubic feet of gas per day (MCFD) from the Muddy formation. The No. 1 well produced until it was shut in on August 1, 1988. When the well resumed production in January 1990, it had already produced 30,126 BO and 38,176 MCF. See Ex. B to Drainage Memorandum. Drainage potential was also recognized by BLM for two Federal leases in addition to W-105536: W-98153 to the north (the surface location of the offending well) and W-98504 to the west.

Tenneco applied to the Commission for an order establishing 80-acre well spacing units. Tenneco proposed a vertical spacing unit (North-South alignment of subdivisions of the public land survey) that combined lots 1 and 2, instead of a horizontal (East-West) unit combining lot 1 with the NE $\frac{1}{4}$ NW $\frac{1}{4}$ included in W-105536 that was only 224 feet away from the bottom location of the offending well. Tenneco's proposal thus minimized protection of correlative rights in the BLM tract. After a hearing on June 7, 1988, the Commission issued a report dated June 17 that recognized BLM's concern about drainage, but turned aside that concern by noting that "it is customary for the BLM to have an agreement with its lessee to deal with this" and that "BLM has the remedy of requesting the Commission to restrict production from this well if its correlative rights are being violated." (Report of the Commission at 2.) ^{6/} The Commission decided that the spacing units would all "be oriented in a North-South or vertical direction." (Report of the Commission at 4.) A spacing unit that would have included lot 1 with a portion of the BLM lease would have run in an East-West direction.

^{5/} There is some confusion in the record as to the actual distance from the lease boundary. The May 1993 BLM Decision gave the distance as 224 feet, a figure corroborated by the June 17, 1988, report of the Wyoming Oil and Gas Conservation Commission (Commission) establishing the 80-acre spacing unit for production from the Muddy formation for the tract from which the well produces. The distance was reported as 242 feet in another BLM document. See Memorandum to File From BLM Petroleum Engineer, signed Aug. 6, 1992, at 2 (hereinafter cited as Drainage Memorandum). Amoco described the distance from the lease line as 272 feet in its letter of Feb. 22, 1990, discussed *infra*.

^{6/} There is no indication that BLM requested such action by the Commission when production from the offending well resumed, but failure to do so did not preclude BLM from protecting its correlative rights by seeking compensation for drainage. Spacing orders that would preclude the drilling of an offset well do not excuse a lessee from liability for drainage. See Spaeth v. Union Oil Co., 710 F.2d 1455 (10th Cir. 1983).

By letter dated June 16, 1988, BLM notified Tenneco and Exxon, who were then the holders of lease WYW-105536, 7/ that the NE $\frac{1}{4}$ NW $\frac{1}{4}$ of sec. 18 (as well as the SE $\frac{1}{4}$ NW $\frac{1}{4}$) was potentially subject to drainage by the VIT Com No. 1 well. Similar letters were issued by BLM concerning drainage of leases W-98153 and W-98504. The BLM letter offered Tenneco and Exxon the options of paying compensatory royalty with respect to the Federal oil and gas being drained by the No. 1 well, drilling a protective well on the leased land being drained, relinquishing the lease for the land subject to drainage, or forming a unit which allocated production from the No. 1 well to the leased land. Tenneco responded by letter with attachments received by BLM on August 19, 1988. Noting that the offending well was shut in on August 1, 1988, upon the expiration of a 90-day flaring order, Tenneco stated that no oil and gas had yet been drained from the leased land because the 207-foot drainage radius was less than the distance from the well to the lease boundaries. Further, Tenneco noted that it might unitize in the future if that was warranted by the results of further development.

By letter to Tenneco dated September 23, 1988, BLM replied:

[T]he method you chose to demonstrate that no drainage has occurred is simplistic. Even so, based on the parameters you provided and the method you used to determine drainage area, drainage will certainly occur with three or four more months of production, assuming that the well produces at approximately the same rate as before it was shut-in.

Hence, BLM required Tenneco to submit a plan within 6 months to protect the E $\frac{1}{4}$ NW $\frac{1}{4}$ of sec. 18 from drainage.

Meanwhile, other wells were drilled in the field. On September 15, 1988, the Schloegel Federal 1-7 well was completed in lot 4, sec. 7, in the spacing unit to the north of that of the offending well. This well on lease WYW-98153 was considered to be a protective well and produced 801 BOPD and 985 MCFD. On November 28, 1988, the Syracuse Federal 1-7 was completed as a dry hole in the SW $\frac{1}{4}$ SE $\frac{1}{4}$, sec. 7.

In December 1988, Amoco Production Company acquired Tenneco's Rocky Mountain Division including its interest in the offending well, the subject lease, and other leases in the Austin Creek Field. By letter dated April 13, 1989, Amoco stated that it was in the process of evaluating a plan of development for the Austin Creek Field and that the offending well would remain shut in until a gas line was brought into the field which was expected to occur during the last quarter of the year. Amoco stated that it would submit a plan to protect the lease within 1 month from the day the offending well is returned to production.

7/ Tenneco and Exxon each held a 50-percent record title interest in the lease.

In June 1989, Amoco spudded the VIT 1-12 Well No. 1, which was completed as a productive well in the NE $\frac{1}{4}$ SE $\frac{1}{4}$, sec. 12, T. 32 N., R. 85 W. In an October 5, 1989, memorandum to the Rawlins District Manager, BLM's Land Area Manager identified this well as posing a potential drainage situation on lease WYW-92476. In a letter dated December 20, 1989, Amoco discussed this drainage situation caused by the VIT 1-12 Well No. 1 and its plans for the Austin Creek Field. Amoco stated that the VIT 1-12 Well No. 1 was completed on December 1 with an initial production test of 303 BOPD and 416 MCFD. Further, Amoco indicated the well would be shut in until completion of production facilities, and production was expected to commence on January 8, 1990.

Amoco further stated that it was currently drilling the Schloegel Federal 1-7 Well No. 3, and if that well was successful, would drill the USA-Amoco/AU Well No. 1 on lease WYW-92476 by the end of March 1990 before any drainage could occur. The letter stated that Amoco and Exxon agreed that unitization efforts should be pursued for the Austin Creek Field, but that data from the two wells would be "critical for determining productive limits and reservoir parameters to be used in unitization." The letter included a map with an overlay giving Amoco's most recent structural interpretation.

By letter dated February 22, 1990, Amoco addressed the potential for drainage of lease W-105536. Amoco stated that the offending well resumed production on January 24, 1990, 8/ and that it anticipated unitization by the end of the year. The letter stated:

We do not believe substantial drainage of Lease W-105536 will occur prior to unitization or development drilling. The primary recovery mechanism of this reservoir is gravity drainage, and the subject lease is down-dip from the Van Irvine Trust Com Well #1. Consequently, even though the well is 272' from the lease line, production is primarily from up-structure reserves and not an immediate threat to drain Lease W-105536.

With respect to development of the Austin Creek Field, Amoco noted that the Schloegel Federal 1-7 Well No. 3 had penetrated the Muddy reservoir below the oil/water contact and that the well was sidetracked to the "Dodds Federal 2-12 bottom hole location approximately 140' upstructure and is currently being completed." Further, Amoco noted that the data from that well was critical for determining the best location to drill in W-105536.

Production from the offending well resumed in January 1990, almost a year and a half after the lessees were notified of the fact that it was draining the Federal lease. During this period, no unitization

8/ The BLM Decision referred to Jan. 1 as the date of resumption.

was effected, and there was no attempt to drill an offset well on lease W-105536. Thus, Appellants failed in their obligation to prevent drainage and are liable for compensatory royalty unless they can establish by a preponderance of the evidence available to them on the date of the alleged breach that an offset well would not have been profitable.

The structural map that accompanied Amoco's letter dated February 22, 1990, shows that most of the structure is defined by a fault curving from the northwest to the southeast from sec. 1, T. 32 N., R. 85 W., into sec. 18, T. 32 N., R. 84 W. The top of the structure appears in sec. 18 at about 3,800 feet below sea level, and the structure dips downward to the northeast. The offending well established production at -4,043 feet, the Schloegel Federal 1-7 established production at -4,180 feet, and the VIT 1-12 Well No. 1 established production at -4,382 feet. However, the Schloegel Federal 1-7 Well No. 3 penetrated the formation between -4,800 and -5,000 feet at a point below the oil/water contact. The map shows that of the land in the offended portion of lease W-105536, the E $\frac{1}{4}$ NW $\frac{1}{4}$ of sec. 18 covers a portion of the structure from above -4,000 feet to -4,800 feet. As Amoco pointed out in its letter, the primary recovery mechanism is gravity drainage, but even though most of the reservoir underlying the offended lease was not subject to drainage from the offending well because it was downdip from that well, Amoco's map still shows that a portion remained updip and was subject to drainage. In the Drainage Memorandum signed August 6, 1992, a BLM Petroleum Engineer stated that "the protective well should have been a mirror well to the Van Irvine Trust Com No. 1 at a location in the NENW of Section 18." (Drainage Memorandum at 3.) A well drilled elsewhere would have been at such a distance from the offending well that a portion of the lease would still have been subject to drainage from the offending well.

No well was drilled in the NE $\frac{1}{4}$ NW $\frac{1}{4}$ of sec. 18, but on October 6, 1990, Amoco completed the 1-18 Roundup Federal as a dry hole in the SE $\frac{1}{4}$ NW $\frac{1}{4}$ of that section on lease W-105536. See Ex. B to Drainage Memorandum. Amoco determined that a permeability barrier existed and that only the northern part of the E $\frac{1}{4}$ NW $\frac{1}{4}$ was productive. As a consequence, BLM conceded that the SE $\frac{1}{4}$ NW $\frac{1}{4}$ was nonproductive and not subject to drainage, thus limiting the drainage claim to the NE $\frac{1}{4}$ NW $\frac{1}{4}$. See BLM letters of Oct. 5, 1992, to Forest and to Exxon.

On July 1, 1991, Amoco sold its interest in the subject properties to Forest Oil Corporation, and Forest continued Amoco's efforts to unitize the field. Although BLM's 1988 notices offered unitization of the lease as an alternative to drilling an offset well to protect the lease from drainage, the lease was not unitized until May 1, 1992, the effective date of the Austin Creek (Muddy) Unit (No. WYW-125235X), when the cumulative production from the Muddy formation reached 271,062 BO and 993,905 MCF. (Drainage Memorandum at 2.) At that point, the offending well concluded primary recovery operations and was converted for secondary recovery by means of gas injection. Thus, this belated unitization in 1992 at a time coincident

with the conversion of the well from producing status cannot be regarded as satisfying the requirement of BLM's 1988 notices that the lease be protected from drainage from the offending well. Rather, unitization assured protection of the remaining reserves under the lease which would be produced from another unit well as a result of pressure from the gas injection well.

Application of the legal principles outlined earlier to the events in this case establishes that Appellants were presumed to have knowledge of the drainage from first production from the VIT Com No. 1 well in April 1988 and that Appellants were obliged to take action to protect the lease from drainage within a reasonable period thereafter. The time span that included the initial 3 months of production from the offending well and the period that it was shut in afforded a more than reasonable period in which to protect the lease from drainage, assuming, arguendo, that an offset well could have reasonably been expected to return a reasonable profit. Thus, Appellants would be deemed to have failed in their obligation to protect the lease unless the lease had already been unitized or a protective well capable of production had been completed before production from the offending well resumed in January 1990. Appellants can sustain their burden by showing that a prudent operator would not have drilled a well at that time. The determination of the economic feasibility of drilling and operating a protective well is based on the anticipated recovery and costs thereof at the time that a prudent operator would have drilled the well, i.e., a reasonable time after he knew or should have known that drainage was occurring. See Atlantic Richfield Co., 105 IBLA at 225-26, 95 Interior Dec. at 240.

In his August 14, 1992, Decisions, the District Manager notified Exxon and Forest on the basis of a detailed geologic and engineering analysis that oil and gas underlying the subject land had in fact been drained by the offending well and that they would be assessed compensatory royalty. He concluded that liability for compensatory royalty dated from January 1, 1990, the date that production from the offending well resumed, and continued until April 30, 1992, the last day before unitization of the drained tract of land. The District Manager also deemed Appellants to be liable for royalty on 31 percent of the oil and gas produced from the No. 1 well, the portion of the oil and gas considered to be taken by that well from under the NE $\frac{1}{4}$ NW $\frac{1}{4}$ of sec. 18. Both Appellants sought review of the District Manager's August 1992 Decision by the State Director, pursuant to 43 C.F.R. § 3165.3(b).

Although the District Manager's decisions did not address the profitability of a protective well and the prudent operator rule, the analysis behind the decisions appears in the petroleum engineer's August 1992 Memorandum to the Drainage File which noted: "The economic analysis for a well protecting lease WYW105536 was performed based on the percentage of the offending well's production that was attributed to the Federal Lease via the drainage factor." (Drainage Memorandum at 3.) The offending well produced 271,062 BO and 993,905 MCF. Id. at 2. Applying a drainage factor

of 31 percent, BLM concluded that a total of 75,652 BO and 307,669 MCF would have been recovered by a protective well. See Ex. J to Drainage Memorandum. We note that by using the amount of drainage rather than producible reserves as a basis for determining the profitability of an offset well, BLM actually understated the amount of production upon which a productive well determination must be based. Nevertheless, BLM's discounted cash flow analysis still determined that a profitable well could have been drilled on the basis of drilling costs of \$950,000 and monthly operating costs of \$2,500.

Estimates of the cost of a protective well may reasonably be based on the cost of nearby wells in the same formation. See 5 Williams & Meyers, *Oil and Gas Law*, § 823.1 (1996). The BLM's economic analysis was based on "[a] historical drilling cost of \$950,000 for January 1990 * * * along with \$2500/month operating cost." (Drainage Memorandum at 3.)

In their appeal to the State Director, Appellants tendered an economic analysis based on estimated oil reserves of 100,000 BO and gas reserves of 538,500 MCF rather than the amount of drainage. Appellants' analysis, which showed a less-than-economic rate of return of 6.8 percent, was based on well completion costs of \$1,200,000 and monthly operating expenses of \$13,200. (Statement of Reasons (SOR) for Review by State Director at Ex. A.) This economic analysis noted that "[f]or simplicity, the model does not include a dry hole risk (which would, of course, decrease the economic viability of the well)." Id.

Prior to the decision on SDR, BLM requested in a letter dated March 5, 1993, that Forest provide supporting information addressing the differences in monthly operating costs estimated by Forest and by BLM. In response, Forest provided detailed itemized cost figures for operation of three producing wells in the Austin Creek Field (VIT Com No. 1 well, Schloegel Federal 1-7, and VIT 1-12 Well No. 1). Omitting one well for which the operating expenses appeared exceptionally high, Forest computed the average monthly operating expense of a producing well at \$13,200. (Letter of Apr. 23, 1993, at Ex. II.) Recognizing a potential for some savings from spreading fixed costs over four wells (instead of the previous three), Forest provided an itemized list of monthly operating expenses totalling \$10,564. (Letter of Apr. 23, 1993, at Ex. II.) Forest also provided support for the projected drilling costs of a protective well based on the costs for drilling three producing wells in the Austin Creek Field. (Letter of Apr. 23, 1993, at Ex. III.) In addition, Appellants presented a revised economic assessment which calculated a rate of return of 9.1 percent before consideration of income taxes and a rate of return of 6.3 percent after including income taxes. See letter of Apr. 23, 1993, at Ex. VI. This economic analysis (for the first time) also considered the impact of applying a dry hole risk factor of 30 percent to the discounted value of the net income after income taxes which resulted in a projected negative return. Id.

In his May 1993 Decision, the Deputy State Director affirmed the District Manager's conclusion that Appellants were liable for compensatory royalty with respect to drainage from the subject land. The Deputy State Director rejected Appellants' analysis of the economics of a protective well to the extent it included consideration of the impact of income taxes and the risk of a dry hole. Purporting to accept most of Appellants' production and cost data, but not including the impacts of income taxes or a dry hole risk, the Deputy State Director deleted \$62,500 in expenses associated with modification of a gas plant to recover natural gas liquids ^{9/} and stated that the rate of return was properly calculated as 11.29 percent. ^{10/} The Deputy State Director concluded that the well would have been economic on the ground the rate of return was "greater than the acceptable 10 percent" rate of return. (Decision at 3.) ^{11/} However, the Deputy State Director modified the August 1992 Decisions to the extent he held Forest liable only for the period of time that it held a record title interest in lease WYW-105536, i.e., from July 1, 1991, to April 30, 1992. Exxon was deemed to be liable for the entire period from January 1990 to April 30, 1992. Appellants appealed to this Board from the Deputy State Director's Decision.

Appellants challenge the Deputy State Director's finding that a prudent operator would have drilled a protective well. Specifically, Appellants challenge the failure of BLM to consider the risk that the protective well would be a dry hole or insufficiently productive to pay for the cost of operations and, hence, not produced. Appellants contend that a dry hole risk of 30 percent is reasonable given the fact that two of three offset wells drilled (Syracuse Federal 1-7 and Roundup 1-18) were dry holes. Further, Appellants assert that BLM erred in failing to assess the impact of income taxes on the rate of return from sale of production. Appellants also argue that the BLM erred in its economic analysis by failing to allow for a delay of at least 2 months in receipt of production sale proceeds due to the time required to drill and complete a well in the Austin Creek Field. Appellants contend that if a risk factor of 30 percent is incorporated in the analysis, the well produces a loss of \$270,000 or \$284,000 (if a 2-month delay in production is considered) even without consideration of the impact of income taxes. See SOR for Appeal at Ex. B, p. 2. Further, Appellants contend that when income taxes are considered, the unrisks rate

^{9/} This omission was not contested on appeal to the Board.

^{10/} This analysis was subsequently modified slightly by BLM on appeal to this Board to reflect a net working interest of 82.5 percent (rather than 81.24 percent) and a 2-month delay until March 1990 for onset of well operating costs (as opposed to drilling/completion costs) and receipt of production revenue. This computation produced a rate of return (without consideration of income taxes or risk of a dry hole) of 11.53 percent. See BLM Answer at 9-10 and Attachment 1 (Madrid Affidavit) at Ex. D.

^{11/} Both Appellants and BLM have accepted 10 percent as a reasonable rate of return on investment in a protective well in this case.

of return declines to 7.80 percent or 7.18 percent if a 2-month production delay is considered, and the return becomes negative when an allowance for dry hole risk is included. Id.

In its Answer, BLM contends that it properly determined the economic feasibility of a protective well without allowance of a dry hole risk factor. Risk of a dry hole is asserted to be inconsistent with Appellants' recognition of the existence of drainage. 12/ Further, BLM contends that it did not err in evaluating the economic return on the protective well without factoring in the impact of income taxes on the rate of return. Since neither BLM nor the petroleum industry considers income taxes when making a paying well determination in the context of a Federal unit, BLM asserts that income taxes are not properly considered in the drainage context either.

12/ It is asserted by BLM that this Board lacks jurisdiction to consider the risk factor on appeal in the absence of a decision on this issue by BLM. We find the decision in Blackhawk Coal Co., 104 IBLA 169 (1988), cited by BLM, to be distinguishable as it involved an appeal from the denial of a transportation allowance which had not been appealed to the Director, Minerals Management Service. Absent a decision on such an appeal, we ruled we had no jurisdiction. We have jurisdiction, however, over the instant appeal, and our disposition is not limited to the arguments explicitly addressed by the decision below. In Kelly E. Hughes, 135 IBLA 130, 136 (1996), we stated:

"When a timely appeal subjects a BLM decision to this Board's jurisdiction, our review authority is de novo in scope because it is our delegated responsibility to decide for the Department 'as fully and finally as might the Secretary' appeals regarding use and disposition of the public lands and their resources. 43 CFR 4.1; Richard Borgen, 117 IBLA 239, 245 n.3 (1991); United States Fish & Wildlife Service, 72 IBLA 218, 220 (1983).

The Board's authority to correct or reverse an erroneous decision by the Secretary's subordinates or predecessors in interest and to decide cases on issues other than those advanced by parties has been judicially recognized.

Ideal Basic Industries, Inc. v. Morton, 542 F.2d 1364, 1367-68 (9th Cir. 1976); see Ben Cohen (On Judicial Remand), 103 IBLA 316, 328-29, aff'd sub nom., Sahni v. Watt, Civ. No. S-83-96-HDM (D. Nev. Jan. 17, 1990), aff'd, (Jan. 14, 1991), aff'd, No. 91-15398 (9th Cir. Apr. 27, 1992) (disposition of a land selection application on a basis other than that for which the case was remanded)."

Further, it must be recognized that a key issue before BLM was the economics of a protective well and that Appellants specifically raised in their appeal to the Deputy State Director the risk of drilling a dry hole as a factor in evaluating the economics of a well. The Deputy State Director declined to consider this factor. In this context, this question is properly before the Board in any event.

In response, Appellants dispute the BLM contention that consideration of a dry hole risk is inconsistent with the fact that drainage is occurring. Appellants assert that it does not follow from the existence of drainage that a protective well drilled by Appellants would have sufficient production to recover operating costs. See Response to Answer to SOR (Response) at 4. It is noted by Appellants that a dry hole (Roundup Federal 1-18 Well) was drilled in the adjacent SE $\frac{1}{4}$ NW $\frac{1}{4}$ in October 1990 in an area which BLM believed prior to that time to also be subject to drainage. (Response at 5-6.) Further, Appellants contend that even if income taxes are omitted from the analysis of the economics of a protective well, a risk factor in excess of 2.13 percent would cause the well to be uneconomic. (Response at 8.)

On the record before us, we find that the Appellants have carried the burden of showing the reasonableness of their projected operating costs and costs for drilling and completing a protective well. As noted above, the best indication of the costs of a completed well is usually found in the costs of nearby wells completed in the same formation. Appellants have supported their cost figures with information based on their experience with drilling and operating other nearby wells in the same formation. Although BLM indicated in its Decision that it did not necessarily agree with Appellants' cost figures, the Decision gave no basis for objection to those figures and actually utilized those numbers (except for gas plant modification costs) in computing a rate of return of 11.29 percent which it found to be economic. Accordingly, the critical issue before us on appeal, which is dispositive with respect to the application of the prudent operator rule in the context of this case, is whether the analysis of a rate of return on a protective well properly considered the impact of income taxes or a dry hole risk.

[3] Appellants have contended that BLM erred in failing to consider the impact of income taxes in its analysis of the profitability of drilling and operating a protective well on the subject land. See SOR at 6. We find that income taxes, no less than other severance and ad valorem taxes, have a direct bearing on the profitability of drilling and operating a well since they affect the net return to the operator. The BLM has considered such impact in prior drainage cases in determining whether a prudent operator would have drilled a protective well. See Benson-Montin-Greer Drilling Corp., 123 IBLA 341, 344, 99 Interior Dec. 115, 116 (1992); Kerr-McGee Corp., 118 IBLA 119, 126 (1991). Inclusion of taxes in a discounted cash flow analysis has been upheld in the context of analyzing whether a deposit of sodium discovered by a prospecting permittee can be mined, processed, and marketed at a profit so as to entitle the permittee to a preference right lease. Bureau of Land Management v. Simons, 128 IBLA 99, 107-08 (1993). As noted previously, Appellants have submitted with their SOR a revised economic assessment showing an after-income-tax rate of return of 7.80 percent and 7.18 percent (with a 2-month production delay).

This rate was calculated without analyzing any impact of the risk of a dry

hole. ^{13/} Thus, it is clear from the record that consideration of the impact of income taxes on the operator's return reduces the rate of return below that which is considered acceptable.

Equally significant is the issue of a dry hole risk. We note that, just as a prudent investor estimates the anticipated return from an investment and then decides whether that anticipated return warrants the risk of losing his principal, once a preponderance of the evidence establishes that the well is likely to return a profit, the reasonableness of that profit may be gauged in light of the risk. "An ordinary, reasonable businessman does not sink money into a venture without an expectation of profit. The return should exceed what the money could earn in high grade bonds or other secure investments. Almost every well involves some degree of risk; hence the return must be high enough to justify this risk." (5 Williams & Meyers, Oil and Gas Law, § 822.2 (1996).)

Appellants assert that the risk is reasonably considered to be 30 percent since, of the three offset wells drilled in the immediate vicinity of the subject land, one (VIT Com No. 1 well) was a producer and two (Roundup Federal 1-18 and Syracuse Federal 1-7) were dry holes. See SOR at 6. Although Appellants' data may provide support for the proposition that there is a 30-percent dry hole risk for a well drilled somewhere in the Austin Creek field, that is not the issue in this case. The relevant question is the dry hole risk of drilling a protective well to offset a producing well that is a mere 224 feet from the lease boundary. The dry hole risk of a protective well would generally correspond to the probability that the offending well virtually defined the limit of the producing structure, a circumstance that appears unlikely. Unanticipated factors, however, including permeability barriers, may increase the dry hole risk.

Although the Syracuse Federal 1-7 was completed as a dry hole on November 28, 1988, this well is at a much greater distance from the offending well than would be required for a protective well. The other dry hole (Roundup Federal 1-18) does illustrate the element of risk associated with a protective well, as drainage was initially asserted by BLM with respect to the entire E $\frac{1}{4}$ NW $\frac{1}{4}$ and this well, as noted above, was regarded by BLM as fulfilling Appellants' obligation to drill a protective well in the SE $\frac{1}{4}$ NW $\frac{1}{4}$. Although we cannot say that the dry hole risk was nonexistent, the relevant evidence in this appeal establishes that the dry hole risk was

^{13/} This economic analysis, which resulted in a rate of return of 11.94 percent without consideration of income taxes (and with no production delay), is essentially similar to the analysis upon which BLM relied which showed a rate of return of 11.29 percent without consideration of income taxes. See BLM Deputy State Director's Decision at 3; BLM Answer, Attachment 1 at Ex. C.

substantially less than 30 percent. The tolerability of that risk depends on the return on investment from the well. However, accepting a risk of even half that rate, clearly appropriate here, reduces profitability to less than the acceptable level of 10 percent. Accordingly, we find that Appellants have met the burden of showing that a prudent operator would not have drilled a protective well.

Therefore, pursuant to the authority delegated to the Board of Land Appeals by the Secretary of the Interior, 43 C.F.R. § 4.1, the Decision appealed from is reversed.

C. Randall Grant, Jr.
Administrative Judge

I concur:

David L. Hughes
Administrative Judge